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(54) CANCER THERAPY

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a cancer therapy by which a load on patients can be reduced by selectively destroying only cancer cells and minimizing the destruction of normal cells.

SOLUTION: A peroxide capable of generating singlet oxygen is injected into a body and the singlet oxygen is generated by decomposition of the peroxide to bring the singlet oxygen into contact with the cancer cells. Thereby, the cancer cells are inactivated or destroyed.

LEGAL STATUS

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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]****[0001]**

**[Field of the Invention]** This invention has few side effects and it is related with the cancer treatment which can destroy only a cancer cell alternatively.

**[0002]**

**[Description of the Prior Art]** Conventionally, administration of the anticancer agent by the catheter currently generally performed as a cure for cancer had the fault which causes a side effect, organ derangement, etc. of a normal cell with destruction severe to a patient by the anticancer agent. Moreover, conventionally, after administration of the anticancer agent by the catheter, since the macromolecule had closed the blood vessel which results to a cancer organization, only one therapy was completed at once.

**[0003]**

**[Problem(s) to be Solved by the Invention]** This invention offers the cancer treatment which can mitigate the burden to a patient by destroying only a cancer cell alternatively and lessening destruction of a normal cell as much as possible compared with these conventional approaches.

**[0004]**

**[Means for Solving the Problem]** This invention is deactivation or a cancer treatment made to destroy about a cancer cell by making the solution of the peroxide which may generate singlet oxygen contact a cancer cell, making singlet oxygen generate by disassembly of this peroxide, and making this singlet oxygen contact a cancer cell. In this invention, the peroxide which may generate singlet oxygen Benzene, naphthalene, An anthracene, 1, 3-diene system, the peroxide guided from the cyclohexadiene system (natural product is included) organic compound, And it is desirable that it is a thing containing at least one of the groups which consist of inorganic chemicals, such as hydrogen peroxide solution. It is most desirable that it is a thing containing at least one of the groups which consist of a peroxide guided from this inner benzene, naphthalene, an anthracene, 1, 3-diene system, and the cyclohexadiene system organic compound. In addition, terpenoid and steroid system matter (an ergosterol, alpha-terpinene, etc.) are included in 1 and 3-diene series.

**[0005]**

**[Function]** Namely, if this invention person makes this peroxide disassemble in the condition of having made the solution of a peroxide, especially organic peroxide contacting a cancer cell The singlet oxygen generated by the decomposition makes a cancer cell deactivate or destroy effectively, and with several microseconds thru/or dozens of seconds, since the life is short This cancer cell was promptly disappeared, deactivation or after making it destroy, it did not remain, damage on a normal cell was minimized [ it flowed out out of the system of reaction, or ], and it found out that it was the cancer treatment with very high safety which can attack only a cancer cell alternatively. It is because the pharmacological activity by singlet oxygen destroys the protein which constitutes a cancer cell, and a gene, and since the life is short, the diffusion to a periphery is restricted and, as a result, a side effect is mitigated. As cancer which can be treated by this invention, there is cancer of internal-organs systems, such as liver cancer, lung cancer, and a pancreatic cancer.

**[0006]** In this invention, in order to make a peroxide solution reach a cancer cell, a medical-application catheter is inserted from a guide peg etc., and the tip of a catheter is doubled with the location of cancer through a blood vessel. Next, the peroxide which dissolved in the water or water-alcoholic mixed solution through the catheter is sent in. In this case, as for the peroxide to be used, it is desirable to use the compound which has the half-life of about 2 hours in human being's temperature. Moreover, if heavy water is used as water in that case, the life of the generated singlet oxygen will become long with dozens of seconds, and it will react with a cancer cell more effectively. Furthermore, since the actuation which plugs up with this invention with a macromolecule the blood vessel which results to a cancer

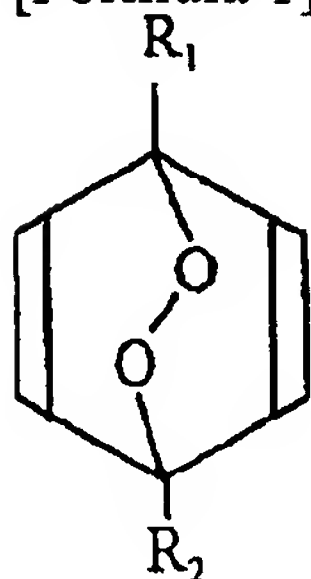
organization after the conventional anticancer agent administration is unnecessary, the therapy of two or more organizations is possible at once.

[0007] moreover, in order to promote disassembly of a peroxide, it is effective to irradiate a supersonic wave, an acoustic wave, an electromagnetic wave, etc. from the exterior, and to raise the temperature of the affected part locally - certain \*\*

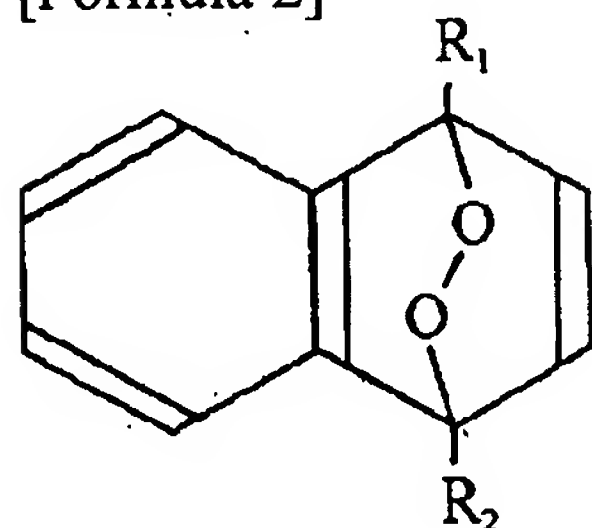
[0008] Thus, after a peroxide is disassembled, even if the organic substance which did not generate singlet oxygen any longer and was produced by decomposition is spread inside of the body, it does not have a bad influence on a normal cell.

[0009] As a peroxide which can be used for this invention, there is the following compound, for example.

[Formula 1]



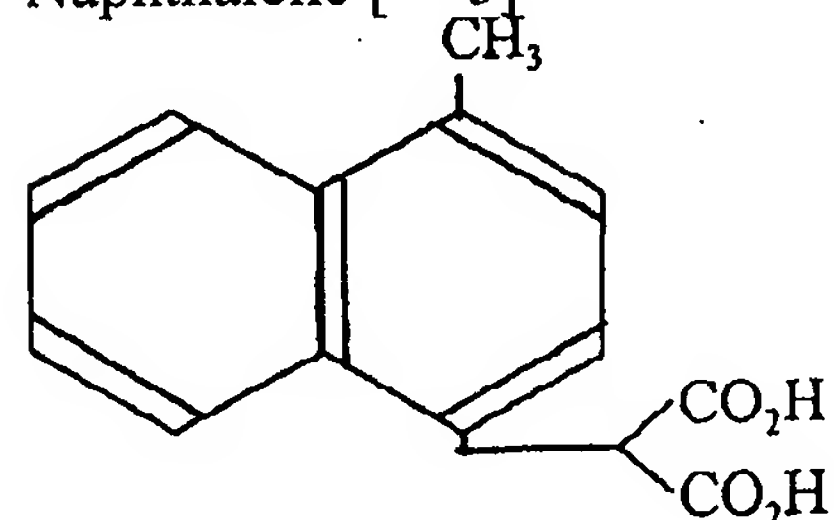
[Formula 2]



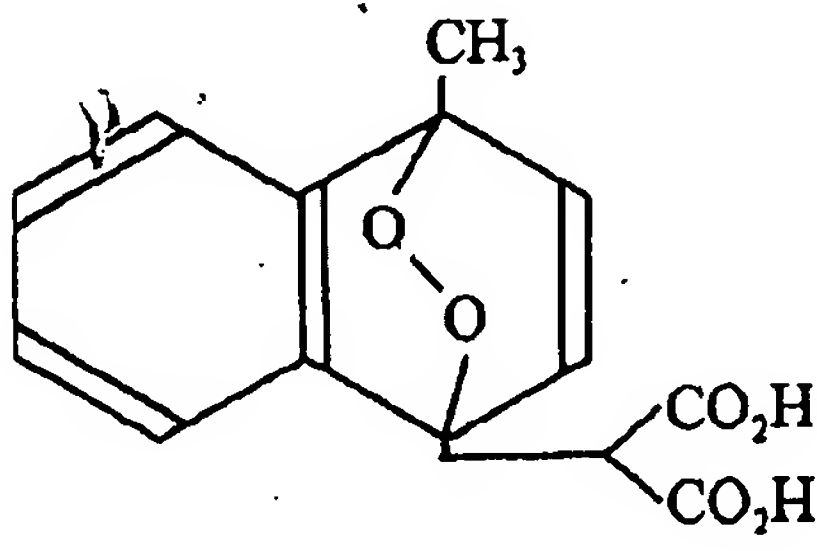
It can choose from the group which consists of -COOH, -CH<sub>2</sub>COOH, -CH<sub>2</sub>CH<sub>2</sub>COOH, -H, -CH<sub>3</sub>, -CH<sub>2</sub>CH<sub>3</sub>, COOX, -CH<sub>2</sub>COOX, and -CH<sub>2</sub>CH<sub>2</sub>COOX (X=Na, K) as R<sub>1</sub> and R<sub>2</sub>.

[0010] An example of the manufacture approach of the peroxide used by this invention is shown below.

Naphthalene [\*\* 3]



1g (3.) 87mmol(s) were melted in the 125ml water solution which consists of 4.1g (16.9mmol) of 152mg [ of sodium hydroxides ] (3.8mmol), 164mg [ of sodium hydrogencarbonates ] (3.8mmol), 0.41g [ of sodium carbonates ] (16.8mmol), and sodium molybdate 2 hydrates. 4ml (41mmol) of hydrogen-peroxide-solution solutions was added 30%, keeping this at pH9.5 thru/or 11 by 20-degreeC. It stirred for 15 minutes, and 30% hydrogen-peroxide-solution solution of tales doses was added further 4 times, and it stirred for 80 minutes. The reaction mixture was cooled to 0-degreeC by the ice bath, and iced 2M phosphate water solution was added, and it was referred to as pH2.5. The produced colorless precipitate was filtered with the glass filter, and cold water washed the obtained crystal 3 times. Reduced pressure drying of this crystal is carried out by 0-degreeC for 2 hours, and it is a peroxide [\*\* 4].



\*\*\*\*\*. This peroxide dissolves in cold water, and is used as it is, or can be used as sodium salt with more large solubility.

[0011]  
[Effect of the Invention] Since the cancer treatment of this invention can destroy only a cancer cell alternatively and can lessen destruction of a normal cell a passage clear from the above explanation, the approach that the burden to a patient is small is offered.

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[Translation done.]

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**CLAIMS**

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**[Claim(s)]**

[Claim 1] The cancer treatment characterized for a cancer cell by deactivation or making it destroy by making the solution of the peroxide which may generate singlet oxygen contact a cancer cell, making singlet oxygen generate by disassembly of this peroxide, and making this singlet oxygen contact a cancer cell.

[Claim 2] The cancer treatment which makes generating of the singlet oxygen by disassembly of a peroxide promote by raising locally the temperature of the part where a cancer cell exists in claim 1.

[Claim 3] The cancer treatment whose approach of raising locally the temperature of the part where a cancer cell exists in claim 2 is an acoustic wave, a supersonic wave, or an electromagnetic wave.

[Claim 4] The cancer treatment containing at least one of the groups which the peroxide which may generate singlet oxygen becomes from the derivative and the hydrogen peroxide solution, the sodium hypochlorite and hydrogen peroxide solution, and sodium molybdate from benzene, naphthalene, an anthracene, 1, 3-diene system, and a cyclohexadiene system organic compound in claim 1.

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[Translation done.]